DOELAP Information Advisory

CONFIGURATION OF DOELAP DOSIMETERS

DECEMBER 5, 2005

PURPOSE

Dosimeters that are submitted for DOELAP Accreditation should be the exact configuration as those used to monitor site personnel.

BACKGROUND

The use of a dosimeter configuration different from that submitted to DOELAP for accreditation was recently self identified. A copy of the original ORPS report is attached for your information.

The tested dosimeter included an identification credential inserted in the front of the dosimeter holder. When the identification card material was changed, the site's testing utilizing ^{137}Cs failed to recognize the dosimeter under responded at low energies. The composition of the old identification credential that was being submitted with the dosimeter for DOELAP testing was now different from that actually used by monitored site personnel. The compositional difference caused the dosimeters to under respond by approximately 40% to extremely low-energy photons (specifically, the M30 category, average energy about 20 keV). Dosimeter response above 35 keV was unaffected.

IMPLICATIONS

Any differences, no matter how insignificant they may appear, have the potential to alter the response of the dosimeter. Dosimeters used to monitor workers for compliance with 10 CFR 835 must be exactly as submitted to DOELAP for accreditation. Use of dosimeters in a configuration other than that tested by DOELAP may affect a site's compliance with 10 CFR 835 unless a determination of technical equivalency has been submitted and approved by DOELAP.

ACTIONS

Dosimetry Supervisors should evaluate their dosimeters to verify that dosimeters used to monitor site personnel are exactly as submitted to DOELAP and as described on their Conditions of Accreditation. Any deviations should be immediately evaluated for potential impacts to recorded doses. Dosimeter configurations identified as deviating from that submitted for accreditation should be immediately scheduled for retesting or a request for technical equivalency submitted.

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Questions concerning this issue should be directed to Scott Schwahn, DOELAP Performance Evaluation Program Administrator by telephone at (208) 526-0324 or by e-mail at schwahso@id.doe.gov,

Robert M. Loesch
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Scott O. Schwahn
DOELAP Performance Evaluation Program Administrator
Radiological and Environmental Sciences Laboratory

EM-ID--CWI-INLPROGM-2005-0005 NOTIFICATION

Occurrence Report

After 2003 Redesign

SITE WIDE & CROSS CUTTING ACTIVITIES

(Name of Facility)

Environmental Restoration Operations

(Facility Function)

Idaho National Laboratory CH2M*WG Idaho, LLC

(Site) (Contractor)

Name: Ruhter

Title: Manager Dosimetry and Rad Eng Services **Telephone No.:** (208) 526-1677

(Facility Manager/Designee)

Name: FIFE, M LEE

Title: PAAA COORDINATOR **Telephone No.:** (208) 526-4880

(Originator/Transmitter)

Name: **Date:**

(Authorized Classifier (AC))

1. Occurrence Report Number: EM-ID--CWI-INLPROGM-2005-0005

Thermoluminescence Dosimeter (TLD) Under Response to Low Energy Photons

2. Report Type and Date: NOTIFICATION

	Date	Time
Notification:	11/29/2005	17:23 (ETZ)
Initial Update:		(ETZ)
Latest Update:		(ETZ)
Final:		(ETZ)

3. Significance Category: 3

4. Division or Project: Idaho Clean-up Project

5. Secretarial Office: EM - Environmental Management

6. System, Bldg., or Equipment: Site wide

7. UCNI?: No

8. Plant Area: Site-wide

9. Date and Time Discovered: 11/23/2005 11:30 (MTZ)

10. Date and Time Categorized: 11/23/2005 12:00 (MTZ)

11. DOE HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

12. Other Notifications:

Date	Time	Person Notified	Organization
11/23/2005	11:32 (MTZ)	S. Hyman	CWI
11/23/2005	12:45 (MTZ)	B. Rankin	CWI
11/23/2005	13:00 (MTZ)	G. Beausoleil	NE-ID
11/23/2005	13:00 (MTZ)	R. Taft	NE-ID

13. Subject or Title of Occurrence:

Thermoluminescence Dosimeter (TLD) Under Response to Low Energy Photons

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14. Reporting Criteria:

10(2) – An event, condition, or series of events that does not meet any of the other reporting criteria, but is determined by the Facility Manager or line management to be of safety significance or of concern to other facilities or activities in the DOE complex. One of the four significance categories should be assigned to the occurrence, based on an evaluation of the potential risks and the corrective actions taken. (1 of 4 criteria - This is a SC 3 occurrence)

15. Description of Occurrence:

In-house testing identified that the picture ID Card used in INEL/INL TLD badges since approximately 2000 causes the TLD badge to under respond to extremely low energy photons/x-rays (specifically the M30 category, average energy about 20 kev). The under-response in this very limited energy range is about 40%. The response of the badge at higher energies (>35 kev) was not effected by the ID card.

16. Is Subcontractor Involved? No

17. Operating Conditions of Facility at Time of Occurrence:

Not Applicable

18. Activity Category:

03 - Normal Operations (other than Activities specifically listed in this Category)

19. Immediate Actions Taken and Results:

Began an evaluation of reported exposures to determine the potential impact of the TLD badge under response.

Discussed the TLD badge response characteristics with appropriate dosimetry staff so that extremely low energy exposures will be flagged for further review.

20. ISM:

5) Provide Feedback and Continuous Improvement

21. Cause Code(s):

A2B3C02 - Inspection/ testing LTA
A4B5C04 - Risks / consequences associated with change not adequately reviewed / assessed

22. Description of Cause:

When the ID card material was changed, it was not recognized that the composition of the PVC material used in the card would alter the TLD response characteristics when exposed to extremely low energy photons. Consequently the TLD response at this energy level was not evaluated or tested. All routine testing performed during this period using Cs-137 indicated appropriate response characteristics.

23. Evaluation (by Facility Manager/Designee):

The TLD under-response which occurs only in a very limited energy range (M30 category,) is about 40%. The response of the badge at higher energies (>35 kev) was not effected by the ID card. Of the 257,000 exposures reviewed thus far, only 15 have the potential to have been affected by this under response; the vast majority of exposures measured during this period came from energy levels where the TLD responds properly.

The review also determined that if any exposures require adjustment, the adjusted values will not exceed any administrative control levels or regulatory limits.

24. Is Further Evaluation Required?: No

25. Corrective Actions
Local Tracking System Name: ICARE

26. Lessons Learned:

27. Similar Occurrence Report Numbers:

28. User-defined Field #1:

2200

29. User-defined Field #2:

30. HQ Keyword(s):
06E--Radiological - Radiological Control Procedures
06H--Radiological - Inadequate Job Planning (RadCon)
11F--Other - Inadequate Design
11H--Other - Procurement/Defective Items
12M--EH Categories - Radiological Control (Other)

31. HQ Summary:

32. DOE Facility Representative Input:

33. DOE Program Manager Input: